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## Correlation Between PlayerTek Performance Data and Fatigue as Measured by the RESTQ-76 Sport Over the Course of a Collegiate Soccer Season

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## ***Correlation Between PlayerTek Performance Data and Fatigue as Measured by the RESTQ-76 Sport Over the Course of a Collegiate Soccer Season***

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### **OBJECTIVE**

The objective of the study is to determine if there is a correlation between results of the RESTQ-76 Sport and performance data found using the PlayerTek system. The purpose is to determine if female NCAA Division III soccer athletes experience fatigue over the course of a season. The PlayerTek provides insight to player fatigue by comparing statistics of mileage, sprint distance, impacts, and top speed that are tracked individually through a GPS system. Assuming that athletes would have an increased mileage over the course of a season they may experience more fatigue. The RESTQ-76 is what is being using to objectively measure fatigue throughout the study. Within the RESTQ-76 there are 19 different subgroups that are broken down to adequately provide insight on potential fatigue factors in the collegiate athlete. Within these 19 subgroups, 8 were selected by the researchers to best evaluate fatigue.

### **DESIGN AND SETTING**

The design of this study was a repeated measure. Subjects were recruited from an NCAA Division III women's soccer team. They were asked to wear the PlayerTek pods for every game and were reminded to turn the pods on and off before and after each competition. The PlayerTek data was cumulative over the course of the season. The Recovery-Stress Questionnaire for Athletes (RESTQ-76 Sport) was administered three times throughout the course of the season at approximately the 1 month, 2 month and season completion time points where they were given ample time as well as instruction on how to fill out the form. Throughout the course of the season the PlayerTek automatically uploaded the data onto the

online system which provided the data to be analyzed at the end of the season. All three rounds of the RESTQ-76 were graded at the end of the season where the 8 subgroups were compared to the PlayerTek cumulative data using ANOVA and bivariate analysis.

### **PARTICIPANTS**

Twenty-nine student athletes aged 18-22 from a NCAA Division III women's soccer team volunteered to participate in this study. This study was approved by the Institutional Review Board and all participants were over the age of 18 and provided written consent once they were all informed with the risk involved in the study. Due to limitations with PlayerTek equipment availability, there was only complete data sets from fourteen participants. Inclusion criteria were that the subjects had to be: 1) A member of the NCAA Division III women's soccer team and 2) 18 years or older or able to obtain consent from a parent or guardian. Exclusion criteria was any injury or illness which resulted in time loss of more than 3 games.

### **INTERVENTION**

The intervention for this study was time. In the study, there were dependent variables including the RESTQ-76 Sport and the PlayerTek data. Within these dependent variables each included subscales that would also be considered dependent variables. The independent variables include time at the three different times the test was administered throughout the season.

### **MAIN OUTCOME MEASUREMENT**

The RESTQ-76 Sport measured the subjects' recovery stress related to 19 different subscales. The PlayerTek system measured

performance variables such as total distance traveled, total sprint distance and impacts. A repeated measures ANOVA was used to determine if there was a difference between the PlayerTek performance values at three separate points in time (1 month, 2 month, season completion). For all variables measured by the PlayerTek, the ANOVA test indicated that there was an overall difference in subjects for "time". Therefore, post hoc analysis was completed to determine at what point in the season the statistically significant difference in PlayerTek performance data existed. Bivariate (Pearson) correlations were performed to determine any correlation between the RESTQ-76 Sport values and the PlayerTek performance data.

### **RESULTS**

There were no statistically significant correlations between the PlayerTek data and the values from the RESTQ-76 Sport subscales. A significant difference was for all PlayerTek performance data points for the three repeated measures were found at the beginning, middle and end of the season ( $p=0.05$ ).

### **CONCLUSION**

PlayerTek data was tracked in a cumulative manner across the course of the soccer season. Expectedly, there was a significant difference in the the PlayerTek data points at the different sampling times during the season. There is no statistically significant correlation between the RESTQ-76 Sport survey scores and the PlayerTek data at the specified points in the season. However, evaluation of the data revealed a moderate

correlation between the PlayerTek total miles taken at the first data collection (Miles 1) to the RESTQ-76 Injury subscale. If the RESTQ-76 Sport had distributed before or immediately after the last game of the season there may be a greater chance that we would have continued to see the correlation making it a possible limitation of the study. It is interesting to note that there was a moderate negative correlation between PlayerTek total sprint distance at the first data collection (Sprint Distance 3) and the RESTQ-76 general stress subscale. This may indicate that the physical and mental stress of the season was significantly less when the RESTQ-76 was administered at season completion (approximately 1 week after the final game of the season). Though this skewed the results of the study it shows the importance of psychosocial fatigue while athletes are in season compared to out of season. It should also be considered that the athletes would have been at a lower physical shape at the beginning of the season compared to the end of the season inferring that they would experience less fatigue. These results are important to the Athletic Training profession because it shows the importance of including the psychosocial aspect of the total athlete. Where most athletic trainers tend to look at the physical symptoms to treat their athlete. This is a unique study because there is not much research comparing the effects of fatigue on collegiate women's soccer athletes over the course of the season. By researching this topic more it could jumpstart a conversation on the importance of outside stressors on possible interventions for enhancing athlete performance.

**Key Words:** *Fatigue, PlayerTek, RESTQ-76 Sport*